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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/039,469	11/08/2001	Sharmin Sadoughi	10200/103	1036

7590 06/16/2003  
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EXAMINER

LE, THAO P

ART UNIT	PAPER NUMBER
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2818

DATE MAILED: 06/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/039,469

Applicant(s)

SADOUGH ET AL.

Examiner

Thao P Le

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 November 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

DETAILED ACTION

***Oath/Declaration***

1. The oath/declaration filed on 11/08/01 is acceptable.
2. Claims 1-23 are pending.
3. The specification has been checked to the extent necessary to determine the presence of all possible minor errors. However, the applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

**Claim Rejections**

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:  

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
5. Claim 23 is rejected under 35 U.S.C. 112, second paragraph, as failing to set forth the subject matter which applicant(s) regard as their invention. Claim 23 is not clear and confused by disclosing the deposition of ARC layer using both second and first tool. Page 11, lines 27-28 stated that the ARC layer is deposited on the semiconductor substrate using a second tool while lines 30-31 stated that the ARC layer is deposited using the first tool.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

**(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.**

6. **Claims 1-2, 4, 9-15, 16-17, 19, 22 and 23 are rejected under 35 USC 102 (b) as being anticipated by Chang et al., U.S. Patent No. 6,130,146.**

Regarding to claims 1, 16, and 22-23, Chang et al. discloses the method of forming a semiconductor structure similar to what recited in claims 1, 16 and 22-23. Chang et al. discloses the method of forming the semiconductor structure comprising the steps of depositing a nitride layer on a semiconductor substrate with a first tool such as LPCVD wherein the nitride layer comprises silicon and nitrogen (abstract and lines 64-67, Col. 1), depositing an anti-reflective layer on the semiconductor substrate with the first tool (lines 4-6, Col. 2). Still regarding to claims 16 and 22, Chang et al. discloses the deposition processes of the two layers above occurred in the same sealed chamber without opening the sealed chamber (Cols. 1-6).

Regarding to claims 2 and 17, Chang et al. discloses that the depositing of the nitride layer occurs before the depositing of the ARC (abstract).

Regarding to claims 3 and 19, Chang et al. discloses the depositing of the nitride layer comprises reacting  $\text{SiH}_2\text{Cl}_2$  and  $\text{NH}_3$  (line 67, Col. 1).

Regarding to claim 9, Chang et al. discloses the depositing of the ARC layer comprises reacting  $\text{SiH}_2\text{Cl}_2$ ,  $\text{NH}_3$  and  $\text{N}_2\text{O}$  (line 8, Col. 2).

Regarding to claim 10, Chang et al. discloses that the ARC layer is silicon oxynitride (abstract).

Regarding to claims 11-12, Chang et al. discloses the depositing of an oxide layer with a second tool wherein the first tool and the second tool are the same and wherein the oxide layer comprises reacting  $\text{SiH}_2\text{Cl}_2$  and  $\text{N}_2\text{O}$  (abstract, Cols. 1-2).

Regarding to claim 13, Chang et al. discloses the first tool comprises PECVP (abstract).

Regarding to claims 14-15, Chang et al. discloses that forming a structure and a device from the structure or an electronic device comprising the process for fabricating in claim 1.

### **Claim Rejections - 35 USC § 103**

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 3, 5-8, 18, 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al., U.S. Patent No. 6,130,146.

Regarding to claims 3 and 18, Chang et al. discloses the method of forming the semiconductor structure comprising the steps of depositing a nitride layer on a semiconductor substrate with a first tool such as LPCVD wherein the nitride layer comprises silicon and nitrogen (abstract and lines 64-67, Col. 1), depositing an anti-reflective layer on the semiconductor substrate with the first tool (lines 4-6, Col. 2). Chang et al. also discloses the deposition processes of the two layers above occurred in the same sealed chamber without opening the sealed chamber (Cols. 1-6). Chang et al. discloses the depositing of nitride layer before depositing the ARC layer but fails to disclose the depositing of the nitride layer after depositing the ARC layer. However, it would have been obvious in the art to deposit the nitride layer before or after the ARC layer depending on the semiconductor structure. In addition, the order of depositing the layers above has not been alleged by applicant to be of significant importance to be patented.

Regarding to claims 5-8 and 20-21, Chang et al. discloses the method of forming the semiconductor structure comprising the steps of depositing a nitride layer on a semiconductor substrate with a first tool such as LPCVD wherein the nitride layer comprises silicon and nitrogen (abstract and lines 64-67, Col. 1), depositing an anti-reflective layer on the semiconductor substrate with the first tool (lines 4-6, Col. 2). Chang et al. also discloses the deposition processes of the two layers above occurred in the same sealed chamber without opening the sealed chamber (Cols. 1-6). Chang et al. discloses the nitride layer comprises silicon and nitride but fail to disclose the ratio of silicon and nitride nor whether the nitride layer comprises silicon rich nitride or silicon deficient nitride or a graded silicon nitride. It would have been obvious in the art that it would not make any difference in functions and manners of the nitride layer whether the nitride layer comprises silicon rich nitride or silicon deficient nitride or a graded silicon nitride. Also, the ratio and percentage of silicon and nitride in the nitride layer have not been alleged by applicant to be of significant importance to obtain a patent.

### ***Conclusion***

9. If Applicants are aware of better art than that which has been cited, they are required to call such to attention of the examiner.

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10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thao P. Le whose telephone number is 703-605-1187. The examiner can normally be reached on Monday-Thursday 7:30am-6: 30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on 703-308-4910. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



Thao Phuong Le

Examiner



HOAI HO  
PRIMARY EXAMINER